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COMPONENT KIT FOR A SWITCH CABINET

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BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a kit for a switchgear cabinet with a rack, with open sides that can be covered by wall elements and at least one cabinet door.

Description of Related Art

A switchgear cabinet is known from German Patent Reference DE 44 39 622 C1, wherein the rack is assembled from twelve identical profiled frame sections and eight corner connectors. The open sides of the rack can be closed by three wall elements, a cover and a cabinet door. Threaded receivers are cut into the vertical profiled frame sections and the corner connectors for attaching the wall elements, with which the screw receptacles of the wall elements can be arranged flush. Fastening screws are passed through the screw receptacles and screwed into the threaded receivers.

The available installation space for housing electrical built-ins is fixed in such switchgear cabinets. Therefore later additions cause problems, if the switchgear cabinet is tightly packed.

SUMMARY OF THE INVENTION

It is one object of this invention to provide a kit for a switchgear cabinet of the type mentioned above, wherein additional installation space is made available in a simple manner.

This object is achieved with different wall elements and/or cabinet doors, which have different installation depths extending in a direction vertically relative to the respective sides of the rack, and can be selectively attached to the rack.

A kit in accordance with this invention makes it possible to vary the volume of the interior of the switchgear cabinet. During this, one or several sides of the rack can be selectively expanded as a function of the desired fittings. The available volume of the switchgear cabinet in particular can be changed in the direction of its width and depth.

In one preferred embodiment of this invention, at least one of the wall elements has a bulge facing away from the switchgear cabinet interior, which is designed as a cable receptacle and to which cables can be conducted via cable passages of the wall element. The cable passages are cut into the wall element in the area assigned to the bottom and/or the top of the switchgear cabinet. It is thus possible to conduct cables from the bottom or the top into the cable receptacle. The cables can be housed in an ordered manner and then can branch off to the desired locations in the interior of the switchgear cabinet.

In this case, the cable passages of the wall element can be closed by removable inserts or covers, so that they can be selectively made accessible when needed.

In order to perform a simple mounting of the wall elements, they can

be suspended from a pivot bearing with a horizontal pivot axis. The wall elements can be pivoted into an upright mounting position, and in this mounting position the wall elements can be fixed in place on the rack by at least one fastening element. With this arrangement the attachment of the wall element can be performed by a single installer. Quick-action clamping devices are preferably used as fastening elements.

A kit in accordance with this invention is distinguished, for example, because the wall elements have a flat wall, which has angled-off sections on its vertical edges. The angled-off sections of the various wall elements have different lengths in the direction vertically relative to the associated side of the rack. It is possible to realize simply designed wall elements with this step, which can be produced with a small outlay in parts.

If the rack has four vertical profiled frame sections forming the sides of the rack, and the wall elements respectively rest with angled-off sections against the sides of two adjoining vertical profiled frame sections facing each other, then the wall elements can be easily inserted into the openings in the rack and can therein be fastened.

Similar to the wall elements, the cabinet doors can also have a flat door leaf which has a circumferential angled-off section on its edges. Here, the angled-off sections of different cabinet doors have different structural depths.

For example, one of the available cabinet doors can have an observation window in the door leaf.

BRIEF DESCRIPTION OF THE DRAWINGS

This invention will be explained in greater detail by an exemplary embodiment represented in the drawings wherein:

Fig. 1 is a rack of a switchgear cabinet, to which different wall elements can be selectively attached, in a perspective exploded view;

Fig. 2 is the rack shown in Fig. 1, together with two wall elements in a perspective exploded view;

Fig. 3 is the rack shown in Figs. 1 and 2, in a partial perspective exploded view, with a built-on wall element; and

Fig. 4 is the rack shown in Figs. 1 and 2, in a perspective exploded view, with three different cabinet doors.

DESCRIPTION OF PREFERRED EMBODIMENTS

A rack for a switchgear cabinet is shown in Fig. 1, which has a lower and an upper base unit 10. The base unit 10 is made from a flat sheet steel blank and has a horizontally oriented bottom 11, which has angled-off edges 12' on its sides. The edges 12' transition into angled-off sections 12", which are oriented parallel with respect to the bottom 11. Plug-in projections 15 are arranged in the corner areas of the bottom 11 and can be either screwed or welded to the base unit 10. The plug-in

projections 15 have a threaded receiver 16 which faces the interior of the switchgear cabinet. Vertical profiled frame sections 20 can be pushed on the plug-in projections 15. In this case, the vertical profiled frame sections 20 are designed as hollow square profiled sections, whose interior cross section approximately corresponds to the exterior cross section of the plug-in projection 15. When the vertical profiled frame sections 20 are pushed on the plug-in projections 15, the screw receptacles 23 of the vertical profiled frame sections 20 are aligned with the threaded receivers 17 of the plug-in projections 15. Fastening screws 21' can be inserted into the screw receptacles 23 and screwed into the threaded receivers 16. In this way, the vertical profiled frame sections 20 are fixedly connected with the base unit 10 to form the rack. The use of base units 10, 10' of different widths is shown by a dashed representation in Fig. 1. The vertical profiled frame sections 20 remain unchanged when using the different base units 10, 10'.

The open sides of the rack can be covered by means of wall elements 30, 40, and by a door, not shown in the drawing. It is indicated in Fig. 1 that different wall elements 30, 40 can be selectively installed on the rack. The wall element 30 can be used for example. The wall element 30 has a flat, vertically oriented wall 31, which has angled-off sections 32, 34 on its edges. The angled-off sections 32, 34 point in the direction toward the interior of the rack. The two vertical angled-off sections 32 have slit-shaped hinge bolt receivers 33. In this case the hinge bolt

receivers 33 are cut, facing obliquely upward, into the angled-off sections 32. They have an opened slit end, with which they can be pushed on the screw head of the fastening screw 21'. The screw head of the fastening screw 21' is used as a hinge bolt 21. The wall element 30 can be pushed on the hinge bolt 21 with its hinge bolt receivers 33, so that pivoted seating with a horizontally oriented pivot axis is created. In the process, the wall element 30 can be maintained at an angle with respect to the associated side of the rack without slipping off the hinge bolt 21. This is made possible by the obliquely cut-in hinge bolt receivers 33. A fastening element 35, embodied as a lock, fixes the wall element 30 in place. The wall element 30 strikes against the two upper fastening screws 21 in the tilted-in pivot position. For this purpose the angled-off sections 32 have notches 33', which form the stops. The lock 35 can be rotated in the mounting position, so that a tongue-shaped locking element of the lock can engage a slit-shaped locking receiver 13 of the upper base unit 10.

A wall element 40, which has a bulge facing away from the interior of the rack, can also be built on the rack in place of the wall element 30. The bulge is used as a cable conduit. Here, the bulge is formed by a lateral wall 41 and the angled-off sections 42 are connected therewith. In contrast to the angled-off sections 32, 34 of the wall element 30, the angled-off sections 42 of the wall element 40 have a greater structural depth. The wall element 40 is open in the upper portion facing the base unit and can be closed by a cover 44. The cover 44 has an upper sheet metal

cover plate 46, which is adjoined by downward-oriented lateral elements 45. The lateral elements 45 extend over the angled-off sections 42, so that the sheet metal cover plate 46 strikes with its underside against the angled-off sections 42. The angled-off sections 42 are beveled in this area, so that the sheet metal cover plate 46 is also arranged at an angle with respect to the horizontal line. This allows an improved water run-off. Two wall elements 40 are shown in Fig. 1, which can be selectively installed on the rack. These two wall elements 40 have different structural depths. It is thus possible to make manipulation areas of different size for cables available, depending on the needs of the user. The attachment of the wall 40 takes place in the same way as the fastening of the wall element 30. Initially they are placed with hinge bolt receivers 33 on the hinge bolts 21. Thereafter, the wall elements 40 can be moved into the upright position and fixed in place on the rack by means of fastening elements. The angled-off sections 42 have notches 33' which are used as stops. If the switchgear cabinet is placed into an interior which is protected against moisture, the cover 44 can be removed. Cables can be inserted into the cable conduit of the wall 40 via the cover 44. The introduced cables can then branch off into the interior of the switchgear cabinet. The cables can also be introduced through an opening 14 enclosed by the base units 10, 10'. The opening 14 can be closed off by cover plates fastened on fastening receivers 12 arranged around the opening 14. Cable passages can also be screwed to the fastening receivers 12.

The use of two walls 40, which enclose a cable conduit, is shown in Fig. 2. As shown, cable clamps 50 can be fastened on the vertical profiled frame sections 20. The cable clamps 50 have two legs 52, which are parallel with each other and can be screwed on the inside to the vertical profiled frame sections 20. The two legs 52 project into the cable space enclosed by the wall element 40 and have a holding section 55. A plurality of tongues 51 are cut free from the holding section 55. Cables 54 can be fastened on the tongues 51 by means of cable binders 53. As shown in Fig. 2, the angled-off sections 42 of the wall element 40 have notches 49 in their upper areas. The respective angled-off section 42 extends around the upper base unit 10 with the notches 49, so that the sheet metal cover plate 46 of the cover 44 can make a flush transition into the top of the base unit 10. Adjoining the notches 49, support sections 48, on which the cover 44 rests, are angled off from the angled-off sections 42. When the cover 44 is put down, the lateral elements 45 extend over the angled-off sections 42. An edge 47, which is bent off the sheet metal cover plate 46, extends over the wall 41.

In order to lead cables out of the floor into the cable conduit enclosed by the wall element 40, inserts 40.2 are used with the wall elements 40. Such an insert 40.2 has a horizontal cover plate 40.4, from which a handle 40.5 is bent off in one piece. The cover plate 40.4 can be pushed through an opening of the wall 42. Guides 40.3 are angled off the angled-off sections 42. The cover plate 40.4 can slide

on the guides 40.3. The insertion movement of the insert 40.2 into the wall element 40 is limited by the handle 40.5 which strikes against the wall 41. With the insert 40.2 pulled out, a cable passage 40.1 is opened, through which the cables 54 can be introduced into the cable conduit of the wall element 40.

The action for fastening a wall element 40 on the rack is shown in greater detail in Fig. 3. The wall element 40 can be placed with its slit-shaped hinge bolt receivers 33 on the hinge bolts 21 and thereafter be brought into the vertical mounting position. Final fastening of the wall element 40 takes place by means of two fastening elements 35. The fastening elements 35 have locking hooks, which can be pivoted around an axis of rotation extending vertically with respect to the angled-off sections 42. A handle is connected with the locking hooks.

Once the wall element 40 is brought into its mounting position, the locking hook can be pivoted by means of the handle.

The locking hook then extends behind the fastening screw 21' received in the notch 33' and clamps it. To prevent unauthorized access, the fastening element 35 can only be actuated from the interior of the switchgear cabinet.

Fastening elements 35 are attached to both angled-off sections 42 of the wall element 40 for assured fixation.

The use of three different cabinet doors is shown in Fig. 4.

The cabinet doors 60 have a flat door leaf 61, which has a

circumferential angled-off section 62 on its edges. The angled-off section 62 can have different extensions in the direction vertically with respect to the door leaf 61.

With a cabinet door 60 an observation window 63 can be cut in the door leaf 61 in order to monitor functions in the interior of the switchgear from the outside of the switchgear cabinet.

BACKGROUND OF THE INVENTION
Field of the Invention

Component Kit for a Switch Cabinet

Description of Related Art

[The] This invention relates to a kit for a switchgear cabinet with a rack, [whose] with open sides that can be covered by [means of] wall elements and at least one cabinet door.

A switchgear cabinet is known from DE 44 39 622 C1, German Patent Reference wherein the rack is assembled [put together] from twelve identical profiled frame sections and eight corner connectors. The open sides of the rack can be closed by [means of] three wall elements, a cover and a cabinet door. Threaded receivers [have been] are cut into the vertical profiled frame sections and the corner connectors for attaching the wall elements[. The], with which the screw receptacles of the wall elements can be arranged flush [with these]. Fastening screws [can be] are passed through the screw receptacles and screwed into the threaded receivers.

The available installation space for housing electrical built-ins is fixed in such switchgear cabinets. Therefore later additions cause problems, if the switchgear cabinet is tightly packed.

SUMMARY OF THE INVENTION

It is [the] one object of [the] this invention to provide a kit for a switchgear cabinet of the type mentioned [at the outset] above wherein additional installation space [can be] is made available in a simple manner.

This object [of the invention] is achieved with [attained in that] different wall elements and/or cabinet doors, which have different installation depths extending in a direction vertically [in relative

relation to the respective sides of the rack, and can be selectively attached to the rack.

A kit in accordance with this invention makes it possible to vary the volume of the interior of the switchgear cabinet. During this, one or several sides of the rack can be selectively expanded as a function of the desired fittings. The available volume of the switchgear cabinet in particular can be changed in the direction of its width and depth.

In one preferred embodiment of this invention, at least one of the wall elements has a bulge facing away from the switchgear cabinet interior, which is designed as a cable receptacle and to which cables can be conducted via cable passages of the wall element. The cable passages are cut into the wall element in the area assigned to the bottom and/or the top of the switchgear cabinet. It is thus possible to conduct cables from the bottom or the top into the cable receptacle. The cables can be housed there in an ordered manner and then branch off to the desired locations in the interior of the switchgear cabinet.

In this case, it can be provided that the cable passages of the wall element can be closed by means of removable inserts or covers, so that they can be selectively made accessible when needed.

In order to be able to perform a simple mounting of the wall elements, they can be suspended from a pivot bearing with a horizontal pivot axis, that the wall elements can be pivoted into an upright mounting position, and that in this mounting position the wall elements can be fixed in place on the

rack by [means of] at least one fastening element. With this arrangement the attachment of the wall element can be performed by a single installer. Quick-action clamping devices are preferably used as fastening elements.

A kit in accordance with [the] (this) invention is distinguished, for example, [in that] (because) the wall elements have a flat wall, which [is provided with] (has) angled-off sections on its vertical edges, and that the (the) angled-off sections of the various wall elements have different lengths in the direction vertically [in relation] (relative) to the associated side of the rack. It is possible to realize simply designed wall elements with this step, which can be produced with a small outlay in parts.

If [it is provided that] the rack has four vertical profiled frame sections [constituting] (forming) the sides of the rack, and [that] the wall elements respectively rest with [their] angled-off sections against the sides of two adjoining vertical profiled frame sections facing each other, (then) the wall elements can be easily inserted into the openings in the rack [provided for this purpose] and can (be therein) fastened [therein].

Similar to the wall elements, the cabinet doors can also have a flat door leaf which [is provided with] (has) a circumferential angled-off section on its edges. Here, the angled-off sections of different cabinet doors have different structural depths.

For example, [it can also be provided that] one of the available cabinet doors [has] (can have) an observation window in the door leaf.

BRIEF DESCRIPTION OF THE DRAWINGS

[The] this invention will be explained in greater detail [in what follows] by [means of] an exemplary embodiment represented in the drawings[. Shown are in]: wherein

Fig. 1[,] is a rack of a switchgear cabinet, to which different wall elements can be selectively attached, in a perspective exploded view[,];

Fig. 2[,] is the rack shown in Fig. 1, [in a representation] together with two wall elements[,] in a perspective exploded view;

Fig. 3[,] is the rack shown in Figs. 1 and 2, in a partial perspective exploded view, [representation] with a built-on wall element[,]; and

Fig. 4[,] is the rack shown in Figs. 1 and 2, with three different cabinet doors, in a perspective exploded view.

DESCRIPTION OF PREFERRED EMBODIMENTS

A rack for a switchgear cabinet is [represented] shown in Fig. 1, which has a lower and an upper base unit 10. The base unit 10 [has been] is made from a flat sheet steel blank[. It] and has a horizontally oriented bottom 11, which has [is provided with] angled-off edges 12' on its sides. The edges 12' [make a] transition into angled-off sections 12'', which are oriented parallel [in] with respect to the bottom 11. Plug-in projections 15 are arranged in the corner areas of the bottom 11[. These] and can be either screwed or welded to the base unit 10. The plug-in projections 15 have a threaded receiver 16 which faces the interior of the switchgear cabinet. Vertical profiled frame sections 20 can be pushed on the plug-in projections 15. In this case, the vertical profiled frame sections 20 are designed as hollow square profiled sections, whose interior cross section approximately corresponds to the exterior cross section of the plug-in projection 15. When the vertical profiled frame sections 20 [have been] are pushed on the plug-in projections 15,

the screw receptacles 23 of the vertical profiled frame sections 20 are aligned with the threaded receivers 17 of the plug-in projections 15. Fastening screws 21' can be inserted into [these] the screw receptacles 23 and screwed into the threaded receivers 16. In this way, the vertical profiled frame sections 20 are fixedly connected with the base unit 10 to form the rack. The use of base units 10, 10' [or] (of different widths is [symbolized] (by shown a dashed representation in Fig. 1. The vertical profiled frame sections 20 remain unchanged when using the different base units 10, 10'.

The open sides of the rack can be covered by means of wall elements 30, 40, and by a door, not [represented] (in shown the drawing. It is indicated in Fig. 1 that different wall elements 30, 40 can be selectively installed on the rack. The wall element 30 can be used for example. The wall element 30 has a flat, vertically oriented wall 31, which [is provided with] (has angled-off sections 32, 34 on its edges. The angled-off sections 32, 34 point in the direction toward the interior of the rack. The two vertical angled-off sections 32 have [been provided with] slit-shaped hinge bolt receivers 33. In this case the hinge bolt receivers 33 are cut, facing obliquely upward, into the angled-off sections 32. They have an opened slit end, with which they can be pushed on the screw head of the fastening screw 21'. The screw head of the fastening screw 21' is used as a hinge bolt 21. The wall element 30 can be pushed on the hinge bolt 21 with its hinge bolt receivers 33, so that pivoted seating with a horizontally oriented pivot axis is created. In the process, the wall element 30 can be maintained at an angle [in] (with respect to the associated side of the rack without slipping off the hinge bolt 21. This is made

possible by the obliquely cut-in hinge bolt receivers 33. A fastening element 35, embodied as a lock, [is provided for fixing] fixes the wall element 30 in place. The wall element 30 strikes against the two upper fastening screws 21 in the tilted-in pivot position. For this purpose the angled-off sections 32 have [been provided with] notches 33', which [constitute] (form the stops. The lock 35 can be rotated [turned] in the mounting position, so that a tongue-shaped locking element of the lock can engage a slit-shaped locking receiver 13 of the upper base unit 10.

A wall element 40, which has a bulge facing away from the interior of the rack, can also be built on the rack in place of the wall element (the 30.) [This] bulge is used as a cable conduit. Here, the bulge is formed by a lateral wall 41 and the angled-off sections 42 (are connected therewith. In contrast to the angled-off sections 32, 34 of the wall element 30, the angled-off sections 42 of the wall element 40 have a greater structural depth. The wall element 40 is open in the upper portion facing the base unit and can be closed by [means of] a cover 44. The cover 44 has an upper sheet metal cover plate 46, which is adjoined by downward-oriented lateral elements 45. The lateral elements 45 extend over the angled-off sections 42, so that the sheet metal cover plate 46 strikes with its underside against the angled-off sections 42. The angled-off sections 42 are beveled in this area, so that the sheet metal cover plate 46 is also arranged at an angle [in] (with respect to the horizontal line. This allows an improved water run-off. Two wall elements 40 are [represented] (shown in Fig. 1, which can be selectively installed on the rack. These two wall elements 40 have different structural depths. ([By means of this it] (It thus is possible

to make manipulation areas of different size for cables available, depending on the needs of the user. The attachment of the wall 40 takes place in the same way as the fastening of the wall element 30. Initially they are placed with hinge bolt receivers 33 on the hinge bolts 21. Thereafter, the wall elements 40 can be moved into the upright position and fixed in place on the rack by means of fastening elements. The angled-off sections 42 [are again provided with the] {have notches 33' {which are used as stops. If the switchgear cabinet is placed into an interior which is protected against moisture, the cover 44 can be removed. Cables can be inserted into the cable conduit of the wall 40 via the cover 44. The introduced cables can then branch off into the interior of the switchgear cabinet.} {the [Introduction of the] cables [is] {can also [possible] be introduced through an opening 14 enclosed by the base units 10, 10'. The opening 14 can be closed off by [means of] cover plates fastened on fastening receivers 12 arranged around the opening 14. Cable passages can also be [optionally] screwed to the fastening receivers 12.

The use of two walls 40, which enclose a cable conduit, is shown [represented] in Fig. 2. As [can be seen from this representation] {shown, cable clamps 50 can be fastened on the vertical profiled frame sections 20. The cable clamps 50 have two legs 52, which are parallel with each other and can be screwed on the inside to the vertical profiled frame sections 20. The two legs 52 project into the cable space enclosed by the wall element 40 and have a holding section 55. A plurality of tongues 51 [have been] {are cut free from the holding section 55. Cables 54 can be fastened on [these] {the tongues 51 by means of cable binders 53. As [can be further seen from] {shown in Fig. 2,

the angled-off sections 42 of the wall element 40 [are provided with] have notches 49 in their upper areas. The respective angled-off section 42 extends around the upper base unit 10 with [these] the notches 49, so that the sheet metal cover plate 46 of the cover 44 can make a flush transition into the top of the base unit 10. Adjoining the notches 49, support sections 48, on which the cover 44 rests, [have been] are angled off from the angled-off sections 42. When the cover 44 is put down, the lateral elements 45 extend over the angled-off sections 42. An edge 47, which [has been] is bent off the sheet metal cover plate 46, extends over the wall 41.

In order to [be able to also] lead cables out of the floor into the cable conduit enclosed by the wall element 40, inserts 40.2 [have been] are used with the wall elements 40. Such an insert 40.2 has a horizontal cover plate 40.4, from which a handle 40.5 is bent off in one piece. The cover plate 40.4 can be pushed through an opening of the wall 42. Guides 40.3 are angled off the angled-off sections 42. The cover plate 40.4 can slide on [these] the guides 40.3. The insertion movement of the insert 40.2 into the wall element 40 is limited by the handle 40.5[. The latter] which strikes against the wall 41. With the insert 40.2 pulled out, a cable passage 40.1 is opened, through which the cables 54 can be introduced into the cable conduit of the wall element 40.

The action for fastening a wall element 40 on the rack is shown in greater detail in Fig. 3. The wall element 40 can be placed with its slit-shaped hinge bolt receivers 33 on the hinge bolts 21 and thereafter be brought into the vertical mounting position. Final fastening of the wall element 40 takes place by means of two fastening elements 35. The fastening elements 35

have locking hooks, which can be pivoted around an axis of rotation extending vertically [in] (with respect to the angled-off sections 42. A handle is connected with the locking hooks.

Once the wall element 40 [has been] (is brought into its mounting position, the locking hook can be pivoted by means of the handle.

The locking hook then extends behind the fastening screw 21' received in the notch 33' and clamps it. To prevent unauthorized access, the fastening element 35 can only be actuated from the interior of the switchgear cabinet.

Fastening elements 35 [have been] (are attached to both angled-off sections 42 of the wall element 40 for assured fixation [in place].

The use of three different cabinet doors is [represented] (shown in Fig. 4.

The cabinet doors 60 have a flat door leaf 61, which has [been provided with] a circumferential angled-off section 62 on its edges. The angled-off section 62 can have different extensions in the direction vertically [in] (with respect to the door leaf 61.

With a cabinet door 60 an observation window 63 can be cut in the door leaf 61 in order to [be able to] monitor functions in the interior of the switchgear from the outside of the switchgear cabinet.

Component Kit for a Switch Cabinet

The invention relates to a kit for a switchgear cabinet with a rack, whose open sides can be covered by means of wall elements and at least one cabinet door.

A switchgear cabinet is known from DE 44 39 622 C1, wherein the rack is put together from twelve identical profiled frame sections and eight corner connectors. The open sides of the rack can be closed by means of three wall elements, a cover and a cabinet door. Threaded receivers have been cut into the vertical profiled frame sections and the corner connectors for attaching the wall elements. The screw receptacles of the wall elements can be arranged flush with these. Fastening screws can be passed through the screw receptacles and screwed into the threaded receivers.

The available installation space for housing electrical built-ins is fixed in such switchgear cabinets. Therefore later additions cause problems, if the switchgear cabinet is tightly packed.

It is the object of the invention to provide a kit for a switchgear cabinet of the type mentioned at the outset, wherein additional installation space can be made available in a simple manner.

This object of the invention is attained in that different wall elements and/or cabinet doors, which have different installation depths extending in a direction vertically in

relation to the respective sides of the rack, can be selectively attached to the rack.

The kit in accordance with the invention makes it possible to vary the volume of the interior of the switchgear cabinet. In the course of this, one or several sides of the rack can be selectively expanded as a function of the desired fittings. The available volume of the switchgear cabinet in particular can be changed in the direction of its width and depth.

It is provided in accordance with a preferred embodiment variation of the invention that at least one of the wall elements has a bulge facing away from the switchgear cabinet interior, which is designed as a cable receptacle and to which cables can be conducted via cable passages of the wall element, and that the cable passages have been cut into the wall element in the area assigned to the bottom and/or the top of the switchgear cabinet. It is thus possible to conduct cables coming from the bottom or the top into the cable receptacle. They can be housed there in an ordered manner and then branch off to the desired locations in the interior of the switchgear cabinet.

In this case it can be provided that the cable passages of the wall element can be closed by means of removable inserts or covers, so that they can be selectively made accessible when needed.

In order to be able to perform a simple mounting of the wall elements, it is conceivable that they can be suspended from a pivot bearing with a horizontal pivot axis, that the wall elements can be pivoted into an upright mounting position, and that in this mounting position the wall elements can be fixed in place on the

rack by means of at least one fastening element. With this arrangement the attachment of the wall element can be performed by a single installer. Quick-action clamping devices are preferably used as fastening elements.

A kit in accordance with the invention is distinguished, for example, in that the wall elements have a flat wall, which is provided with angled-off sections on its vertical edges, and that the angled-off sections of the various wall elements have different lengths in the direction vertically in relation to the associated side of the rack. It is possible to realize simply designed wall elements with this step, which can be produced with a small outlay in parts.

If it is provided that the rack has four vertical profiled frame sections constituting the sides of the rack, and that the wall elements respectively rest with their angled-off sections against the sides of two adjoining vertical profiled frame sections facing each other, the wall elements can be easily inserted into the openings in the rack provided for this purpose and can be fastened therein.

Similar to the wall elements, the cabinet doors can also have a flat door leaf which is provided with a circumferential angled-off section on its edges. Here, the angled-off sections of different cabinet doors have different structural depths.

For example, it can also be provided that one of the available cabinet doors has an observation window in the door leaf.

The invention will be explained in greater detail in what follows by means of an exemplary embodiment represented in the drawings. Shown are in:

Fig. 1, a rack of a switchgear cabinet, to which different wall elements can be selectively attached, in a perspective exploded view,

Fig. 2, the rack in Fig. 1 in a representation together with two wall elements,

Fig. 3, the rack in Figs. 1 and 2 in a partial perspective representation with a built-on wall element, and

Fig. 4, the rack in Figs. 1 and 2 with three different cabinet doors.

A rack for a switchgear cabinet is represented in Fig. 1, which has a lower and an upper base unit 10. The base unit 10 has been made from a flat sheet steel blank. It has a horizontally oriented bottom 11, which is provided with angled-off edges 12' on its sides. The edges 12' make a transition into angled-off sections 12'', which are oriented parallel in respect to the bottom 11. Plug-in projections 15 are arranged in the corner areas of the bottom 11. These can be either screwed or welded to the base unit 10. The plug-in projections 15 have a threaded receiver 16 which faces the interior of the switchgear cabinet. Vertical profiled frame sections 20 can be pushed on the plug-in projections 15. In this case the vertical profiled frame sections 20 are designed as hollow square profiled sections, whose interior cross section approximately corresponds to the exterior cross section of the plug-in projection 15. When the vertical profiled frame sections 20 have been pushed on the plug-in projections 15,

the screw receptacles 23 of the vertical profiled frame sections 20 are aligned with the threaded receivers 17 of the plug-in projections 15. Fastening screws 21' can be inserted into these screw receptacles 23 and screwed into the threaded receivers 16. In this way the vertical profiled frame sections 20 are fixedly connected with the base unit 10 to form the rack. The use of base units 10, 10' or different widths is symbolized by a dashed representation in Fig. 1. The vertical profiled frame sections 20 remain unchanged when using the different base units 10, 10'.

The open sides of the rack can be covered by means of wall elements 30, 40, and by a door, not represented in the drawing. It is indicated in Fig. 1 that different wall elements 30, 40 can be selectively installed on the rack. The wall element 30 can be used for example. The wall element 30 has a flat, vertically oriented wall 31, which is provided with angled-off sections 32, 34 on its edges. The angled-off sections 32, 34 point in the direction toward the interior of the rack. The two vertical angled-off sections 32 have been provided with slit-shaped hinge bolt receivers 33. In this case the hinge bolt receivers 33 are cut, facing obliquely upward, into the angled-off sections 32. They have an opened slit end, with which they can be pushed on the screw head of the fastening screw 21'. The screw head of the fastening screw 21' is used as a hinge bolt 21. The wall element 30 can be pushed on the hinge bolt 21 with its hinge bolt receivers 33, so that pivoted seating with a horizontally oriented pivot axis is created. In the process, the wall element 30 can be maintained at an angle in respect to the associated side of the rack without slipping off the hinge bolt 21. This is made

possible by the obliquely cut-in hinge bolt receivers 33. A fastening element 35, embodied as a lock, is provided for fixing the wall element 30 in place. The wall element 30 strikes against the two upper fastening screws 21 in the tilted-in pivot position. For this purpose the angled-off sections 32 have been provided with notches 33', which constitute the stops. The lock 35 can be turned in the mounting position, so that a tongue-shaped locking element of the lock can engage a slit-shaped locking receiver 13 of the upper base unit 10.

A wall element 40, which has a bulge facing away from the interior of the rack, can also be built on the rack in place of the wall element 30. This bulge is used as a cable conduit. Here, the bulge is formed by a lateral wall 41 and the angled-off sections 42 connected therewith. In contrast to the angled-off sections 32, 34 of the wall element 30, the angled-off sections 42 of the wall element 40 have a greater structural depth. The wall element 40 is open in the upper portion facing the base unit and can be closed by means of a cover 44. The cover 44 has an upper sheet metal cover plate 46, which is adjoined by downward-oriented lateral elements 45. The lateral elements 45 extend over the angled-off sections 42, so that the sheet metal cover plate 46 strikes with its underside against the angled-off sections 42. The angled-off sections 42 are beveled in this area, so that the sheet metal cover plate 46 is also arranged at an angle in respect to the horizontal line. This allows an improved water run-off. Two wall elements 40 are represented in Fig. 1, which can be selectively installed on the rack. These two wall elements 40 have different structural depths. By means of this it is possible

to make manipulation areas of different size for cables available, depending on the needs of the user. The attachment of the wall 40 takes place in the same way as the fastening of the wall element 30. Initially they are placed with hinge bolt receivers 33 on the hinge bolts 21. Thereafter, the wall elements 40 can be moved into the upright position and fixed in place on the rack by means of fastening elements. The angled-off sections 42 are again provided with the notches 33' used as stops. If the switchgear cabinet is placed into an interior which is protected against moisture, the cover 44 can be removed. Cables can be inserted into the cable conduit of the wall 40 via the cover 44. The introduced cables can then branch off into the interior of the switchgear cabinet. Introduction of the cables is also possible through an opening 14 enclosed by the base units 10, 10'. The opening 14 can be closed off by means of cover plates fastened on fastening receivers 12 arranged around the opening 14. Cable passages can also be optionally screwed to the fastening receivers 12.

The use of two walls 40, which enclose a cable conduit, is represented in Fig. 2. As can be seen from this representation, cable clamps 50 can be fastened on the vertical profiled frame sections 20. The cable clamps 50 have two legs 52, which are parallel with each other and can be screwed on the inside to the vertical profiled frame sections 20. The two legs 52 project into the cable space enclosed by the wall element 40 and have a holding section 55. A plurality of tongues 51 have been cut free from the holding section 55. Cables 54 can be fastened on these tongues 51 by means of cable binders 53. As can be further seen from Fig. 2,

the angled-off sections 42 of the wall element 40 are provided with notches 49 in their upper areas. The respective angled-off section 42 extends around the upper base unit 10 with these notches 49, so that the sheet metal cover plate 46 of the cover 44 can make a flush transition into the top of the base unit 10. Adjoining the notches 49, support sections 48, on which the cover 44 rests, have been angled off from the angled-off sections 42. When the cover 44 is put down, the lateral elements 45 extend over the angled-off sections 42. An edge 47, which has been bent off the sheet metal cover plate 46, extends over the wall 41.

In order to be able to also lead cables out of the floor into the cable conduit enclosed by the wall element 40, inserts 40.2 have been used with the wall elements 40. Such an insert 40.2 has a horizontal cover plate 40.4, from which a handle 40.5 is bent off in one piece. The cover plate 40.4 can be pushed through an opening of the wall 42. Guides 40.3 are angled off the angled-off sections 42. The cover plate 40.4 can slide on these guides 40.3. The insertion movement of the insert 40.2 into the wall element 40 is limited by the handle 40.5. The latter strikes against the wall 41. With the insert 40.2 pulled out, a cable passage 40.1 is opened, through which the cables 54 can be introduced into the cable conduit of the wall element 40.

The action for fastening a wall element 40 on the rack is shown in greater detail in Fig. 3. The wall element 40 can be placed with its slit-shaped hinge bolt receivers 33 on the hinge bolts 21 and thereafter be brought into the vertical mounting position. Final fastening of the wall element 40 takes place by means of two fastening elements 35. The fastening elements 35

have locking hooks, which can be pivoted around an axis of rotation extending vertically in respect to the angled-off sections 42. A handle is connected with the locking hooks.

Once the wall element 40 has been brought into its mounting position, the locking hook can be pivoted by means of the handle.

The locking hook then extends behind the fastening screw 21' received in the notch 33' and clamps it. To prevent unauthorized access, the fastening element 35 can only be actuated from the interior of the switchgear cabinet.

Fastening elements 35 have been attached to both angled-off sections 42 of the wall element 40 for assured fixation in place.

The use of three different cabinet doors is represented in Fig. 4.

The cabinet doors 60 have a flat door leaf 61, which has been provided with a circumferential angled-off section 62 on its edges. The angled-off section 62 can have different extensions in the direction vertically in respect to the door leaf 61.

With a cabinet door 60 an observation window 63 can be cut in the door leaf 61 in order to be able to monitor functions in the interior of the switchgear from the outside of the switchgear cabinet.

Claims

1. A kit for a switchgear cabinet with a rack, whose open sides can be covered by means of wall elements and at least one cabinet door,

characterized in that

different wall elements (30, 40) and/or cabinet doors (60), which have different installation depths extending in a direction vertically in relation to the respective sides of the rack, can be selectively attached to the rack.

2. The kit in accordance with claim 1,

characterized in that

at least one of the wall elements (40) has a bulge facing away from the switchgear cabinet interior, which is designed as a cable receptacle and to which cables (54) can be conducted via cable conduits (40.1) of the wall element (40), and

the cable conduits (40.1) have been cut into the wall element (40) in the area assigned to the bottom and/or the top of the switchgear cabinet.

3. The kit in accordance with claim 3,

characterized in that

the cable passages (40.1) of the wall element (40) can be closed by means of removable inserts (40.2) or covers (44).

4. The kit in accordance with one of claims 1 to 3, characterized in that

the wall elements (40) can be suspended from a pivot bearing with a horizontal pivot axis,

the wall elements (40) can be pivoted into an upright mounting position, and

in this mounting position the wall elements (40) can be fixed in place on the rack by means of at least one fastening element (35).

5. The kit in accordance with one of claims 1 to 4, characterized in that

the wall elements (40) have a flat wall (41), which is provided with angled-off sections (42) on its vertical edges, and

the angled-off sections (42) of the various wall elements (42) have different lengths in the direction vertically in relation to the associated side of the rack.

6. The kit in accordance with claim 5, characterized in that

the rack has four vertical profiled frame sections (20) constituting the sides of the rack, and

the wall elements (40) respectively rest with their angled-off sections (42) against the sides of two adjoining vertical profiled frame sections (20) facing each other.

7. The kit in accordance with one of claims 1 to 6, characterized in that

the cabinet door (60) has a flat door leaf (61) which is provided with a circumferential angled-off section (62) on its edges, and

the angled-off section (62) defines different structural depths of different cabinet doors (60).

8. The kit in accordance with one of claims 1 to 7, characterized in that

an observation window (63) has been enclosed in the door leaf (61) of one of the cabinet doors (60).

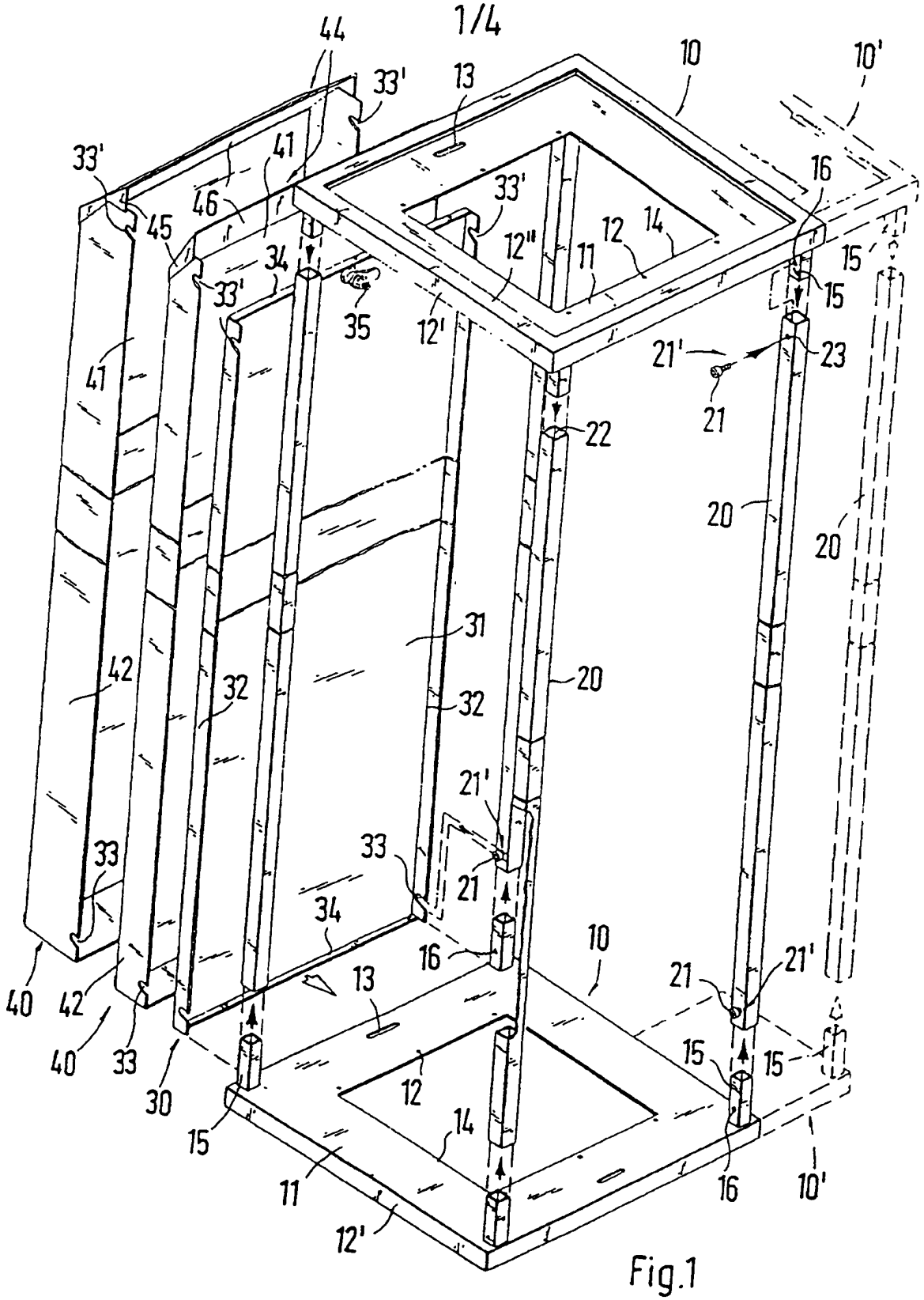
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Fig.1

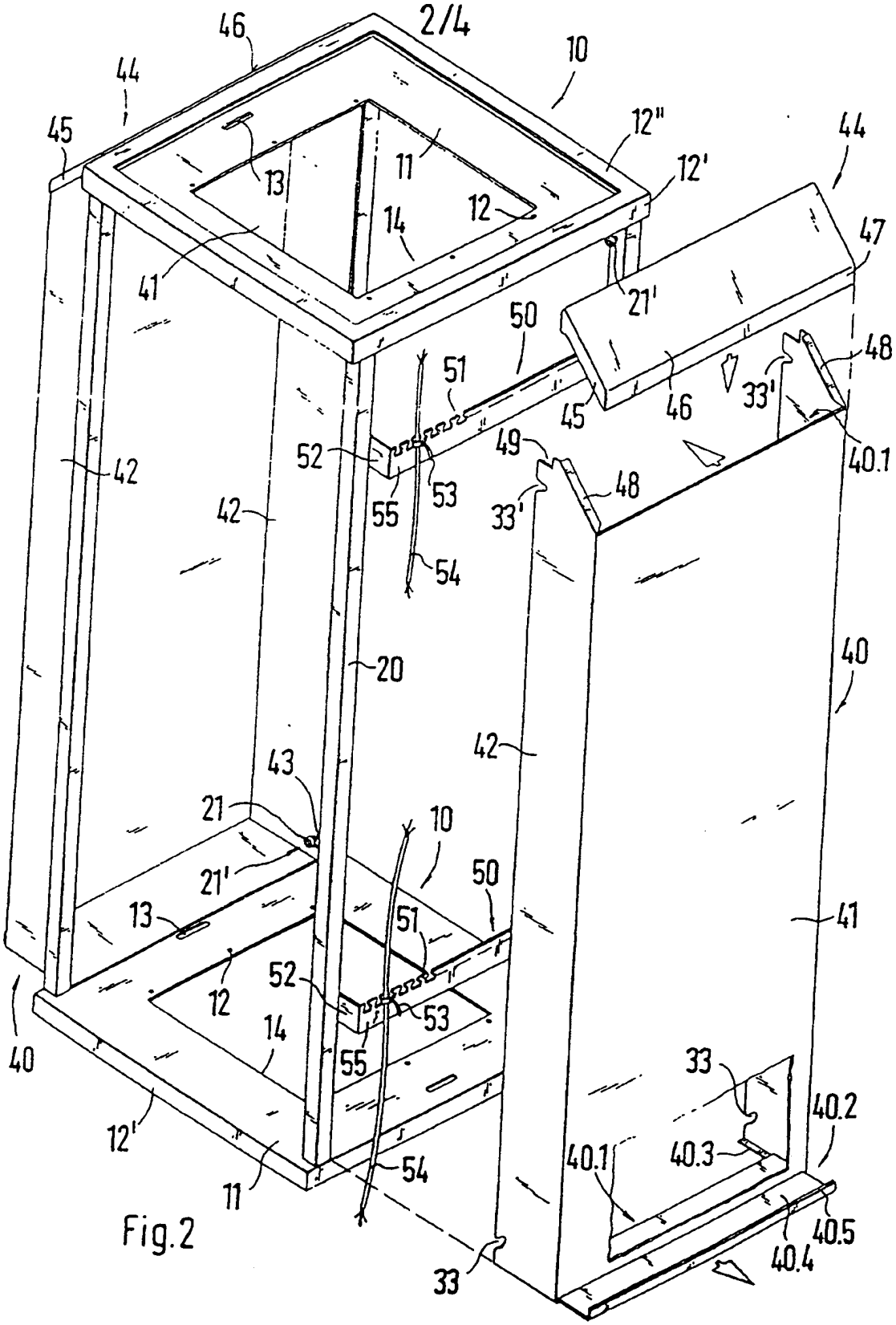
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Fig.2

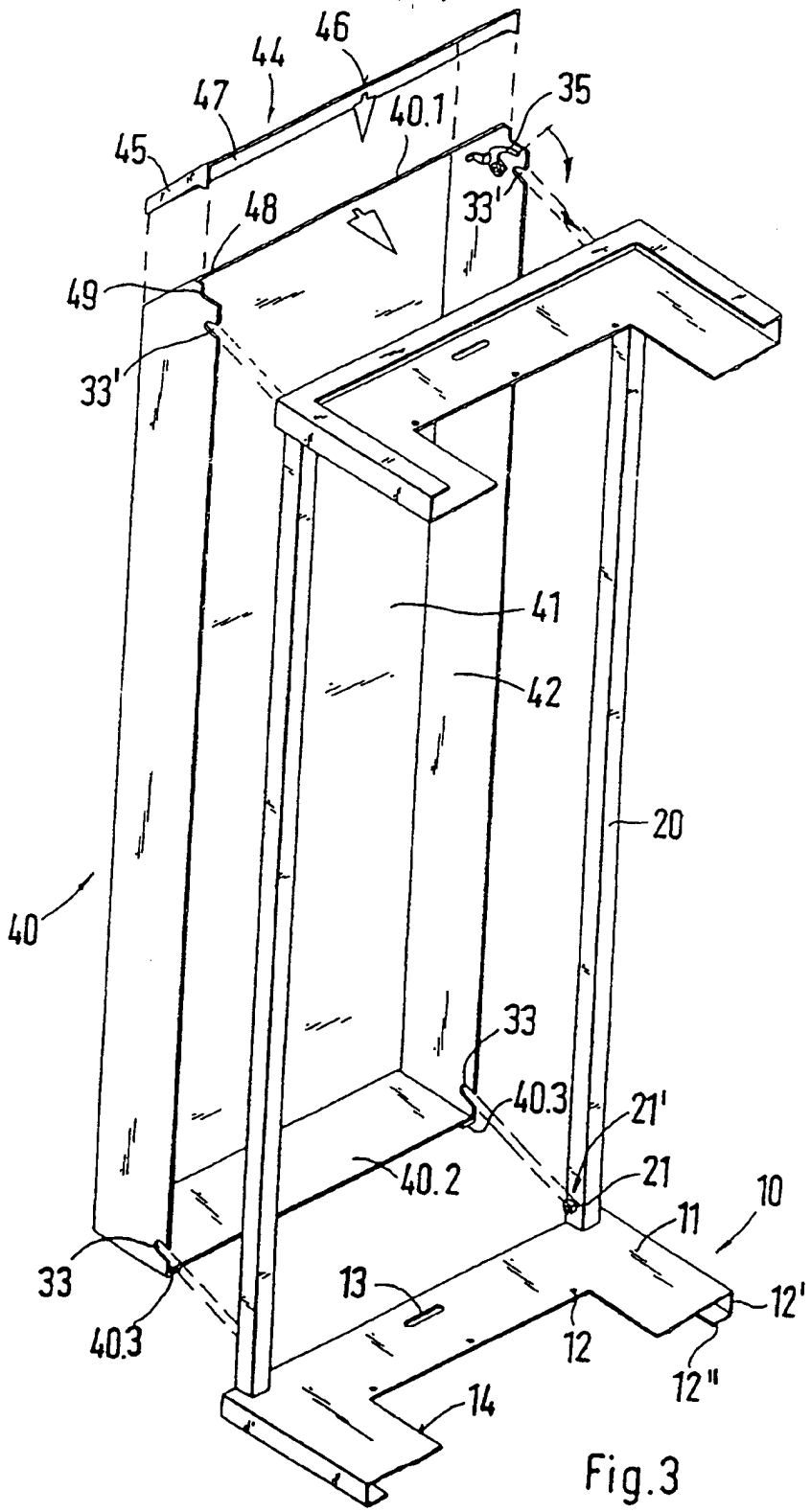
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Fig.3

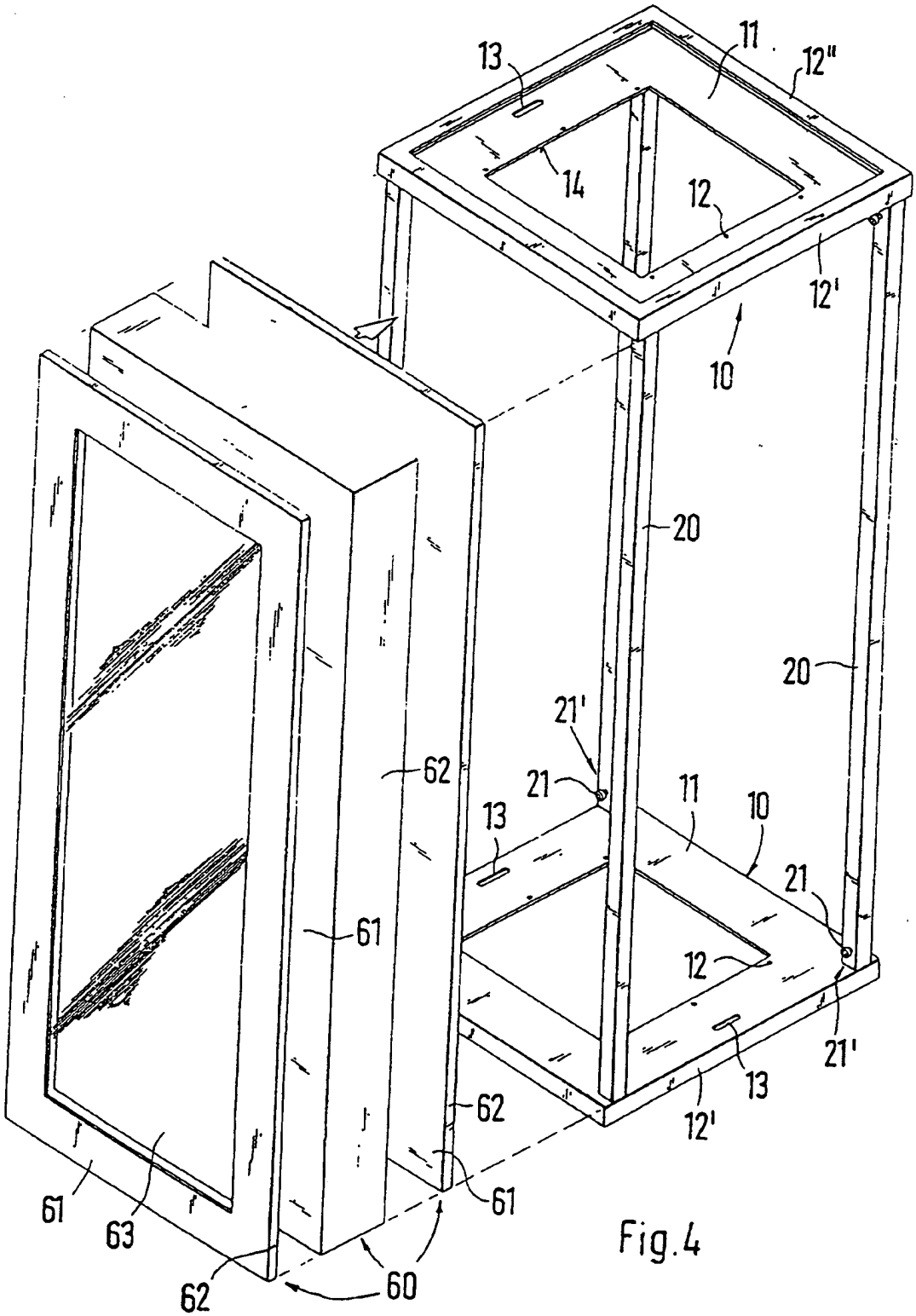
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Fig.4

1170/12

Declaration and Power of Attorney For Patent Application
Erklärung Für Patentanmeldungen Mit Vollmacht
German Language Declaration

Als nachstehend benannter Erfinder erkläre ich hiermit an Eides Statt:

dass mein Wohnsitz, meine Postanschrift, und meine Staatsangehörigkeit den im Nachstehenden nach meinem Namen aufgeführten Angaben entsprechen,

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BAUSATZ FÜR EINEN SCHALTSCHRANK

deren Beschreibung

(zutreffendes ankreuzen)
■ hier beigetfügt ist.

☐ am _____ unter der

Anmeldungsseriennummer _____

eingereicht wurde und am _____ abgeändert wurde (falls tatsächlich abgeändert).

Ich bestätige hiermit, dass ich den Inhalt der obigen Patentanmeldung einschliesslich der Ansprüche durchgesehen und verstanden habe, die eventuell durch einen Zusatzantrag wie oben erwähnt abgeändert wurde.

Ich erkenne meine Pflicht zur Offenbarung irgendwelcher Informationen, die für die Prüfung der vorliegenden Anmeldung in Einklang mit Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) von Wichtigkeit sind, an.

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As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

COMPONENT KIT FOR A SWITCH CABINET

the specification of which

(check one)
■ is attached hereto.

☐ was filed on _____ as

Application Serial No. _____

and was amended on _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

German Language Declaration

Prior foreign applications
Priorität beansprucht

			Priority Claimed	
198 11 714.0 (Number) (Nummer)	Germany (Country) (Land)	18 March 1998 (Day/Month/Year Filed) (Tag/Monat/Jahr eingereicht)	■ Yes Ja	☐ No Nein
PCT/EP99/01666 (Number) (Nummer)	PCT (Country) (Land)	13 March 1999 (Day/Month/Year Filed) (Tag/Monat/Jahr eingereicht)	■ Yes Ja	☐ No Nein
(Number) (Nummer)	(Country) (Land)	(Day/Month/Year Filed) (Tag/Monat/Jahr eingereicht)	☐ Yes Ja	☐ No Nein

Ich beanspruche hiermit gemäss Absatz 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 120, den Vorzug aller unten aufgeführten Anmeldungen und falls der Gegenstand aus jedem Anspruch dieser Anmeldung nicht in einer früheren amerikanischen Patentanmeldung laut dem ersten Paragraphen des Absatzes 35 der Zivilprozessordnung der Vereinigten Staaten, Paragraph 112 offenbart ist, erkenne ich gemäss Absatz 37, Bundesgesetzbuch, Paragraph 1.56(a) meine Pflicht zur Offenbarung von Informationen an, die zwischen dem Anmeldedatum der früheren Anmeldung und dem nationalen oder PCT Internationale Anmeldedatum dieser Anmeldung bekannt geworden sind.

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

None (Application Serial No.) (Anmeldeseriennummer)	None (Filing Date) (Anmeldedatum)	None (Status) (patentiert, anhangig aufgegeben)	(Status) (patented, pending, abandoned)
None (Application Serial No.) (Anmeldeseriennummer)	None (Filing Date) (Anmeldedatum)	None (Status) (patentiert, anhangig aufgegeben)	(Status) (patented, pending, abandoned)

Ich erkläre hiermit, dass alle von mir in der vorliegenden Erklärung gemachten Angaben nach meinem besten Wissen und Gewissen der vollen Wahrheit entsprechen, und dass ich diese eidesstattliche Erklärung in Kenntnis dessen abgebe, dass wissentlich und vorsätzlich falsche Angaben gemäss Paragraph 1001, Absatz 18 der Zivilprozessordnung der Vereinigten Staaten von Amerika mit Geldstrafe belegt und/oder Gefängnis bestraft werden koennen, und dass derartig wissentlich und vorsätzlich falsche Angaben die Gültigkeit der vorliegenden Patentanmeldung oder eines darauf erteilten Patentes gefährden können.

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Charles C. Kinne Regis. No. 31,631
Mark E. Fejer Regis. No. 34,817
Kevin D. Erickson Regis. No. 38,736
Nick C. Kottis Regis. No. 31,974

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AUTHORIZATION OF ATTORNEYS TO ACCEPT AND FOLLOW INSTRUCTIONS FROM REPRESENTATIVE

The undersigned to this declaration and power of attorney hereby authorizes the U.S. attorneys named above to accept and follow instructions from
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Jeck • Fleck • Herrmann
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Germany
as to any actions to be taken in the U.S. Patent and Trademark Office regarding this application without direct communication between the U.S. attorneys and the undersigned. In the event of a change in the persons from whom instructions may be taken, the U.S. attorneys will be so notified by the undersigned.

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Citizenship

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D-35418 Buseck, Germany

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German Language Declaration

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Unterschrift des Erfinders — Datum: 28.04.00

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Rolf BENNER

Inventor's signature — Date: 28.04.00

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